LONG TERM LOAD FORECASTING USING LEAST-SQUARE REGRESSION BASED ON GROSS DOMESTIC PRODUCT (GDP)

This thesis is presented in partial fulfillment for the award of the Bachelor of Electrical Engineering (Hons.) Universiti Teknologi MARA.

MOHD ALHAMZI BIN SAMAH

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

MALAYSIA

ACKNOWLEDGEMENT

In the name of ALLAH the Most Gracious and the Most Merciful, it is with deepest gratitude that ALLAH gives me strength and ability to complete this project.

I would like take this opportunity to express my thanks and appreciations to my project supervisor, Puan Norziana Bte Aminudin and Dr Fuad Bin Jamaludin from Tenaga Nasional Berhad (TNB) for their concern, valuable time, effort, constant encouragement and patience in supervising my project from beginning until the completion of this thesis.

My special thanks go to my beloved family, especially to my mother and my father who are the dearest person in my life and greatest source of inspiration, moral support and financial support.

Last but not least, I wish to express my earnest thanks to my lecturer and my friends for help and motivation in completing this project.

Mohd Alhamzi B Samah

Faculty of Electrical Engineering

Universiti Teknologi Mara (UiTM)

Shah Alam, Selangor Darul Ehsan

ABSTRACT

This report describes the calculation to predict load demand in the future using Microsoft Excel and software MATLAB program. Studies are made by using Least-square Regression method as the technique to predict the load demand.

The objectives of this project is to obtained a value of predict load demand between 2009 to 2018 based on Gross domestic Product (GDP).

Studies were made to investigate the effectiveness and prove of using Least-square regression method to forecasting the load in the future.

Result that has been calculated using MATLAB program was represented to prove the effectiveness using Least-square regression method. The result proved that using Least-square regression method can predict the load demand in the future.

TABLE OF CONTENT

CHAPTER		DESCRIPTION	PAGE
		Title	i
		Declaration	ii
		Dedication	iii
		Acknowledgment	iv
		Abstract	v
		Table of Content	vi
		List of Figures	vii
		List of Tables	ix
		Abbreviation	x
1		**Introduction**	
	1.0	Background	1
	1.1	Objectives	3
	1.2	Project Organization	3
	1.3	Scope of work	4
2		**Literature Review**	
	2.0	Introduction	5
	2.1	Forecasting Methods	10
		2.1.1 Qualitative Forecasting Methods	10
		2.1.2 Quantitative Forecasting Methods	13
	2.2	Error in Forecasting	13
		2.2.1 Types of Forecasts	14
		2.2.2 Measuring Forecast Errors	14
	2.3	Choosing A Forecasting Technique	19
	2.4	Regression Analysis	21
	2.5	Gross Domestic Product	21

CHAPTER	DESCRIPTION		PAGE
3	**Methodology**		
	3.0	Introduction	22
	3.1	Econometric Method	23
		3.1.1 Least-Square Regression	23
	3.2	Accuracy of Linear Regression	26
	3.3	R-Squared Value	27
	3.4	Data and Assumption	27
	3.5	Computer Algorithm	30
4	**Result and Discussion**		
	4.0	Introduction	32
	4.1	Discussion	39
5	**Conclusion and Recommendation**		
	5.0	Conclusion	41
	5.1	Recommendation	41
	References		42
	Appendices		